## 26. ON A NEW FLAGELLATE, *TRICHOMITUS HYDERABADENSIS* SP.NOV. FROM THE FROG, *RANA TIGERINA* (DAUD.)

(*With five text-figures*)

Numerous interesting flagellates were collected during a survey of the intestinal flagellates of amphibians of the Hyderabad region, carried out by the author during the period 1960-63. One of these, belonging to the genus *Trichomitus* Swezy, 1915 (Order Trichomonadida, Kirby, 1947 ; Family Trichomonadidae Chalmers & Pekkola, 1918 emend. Honigberg, 1963 ; Subfamily Trichomonadinae Chalmers & Pekkola, 1918 emend. Honigberg 1963) is described in this communication.

The slides used in the study were stained with Heidenhain's Iron Haematoxylin after fixation in Schaudinn's fluid or with Giemsa's stain after fixation in methanol. The drawings were made with a camera lucida, at a magnification of about × 2000.

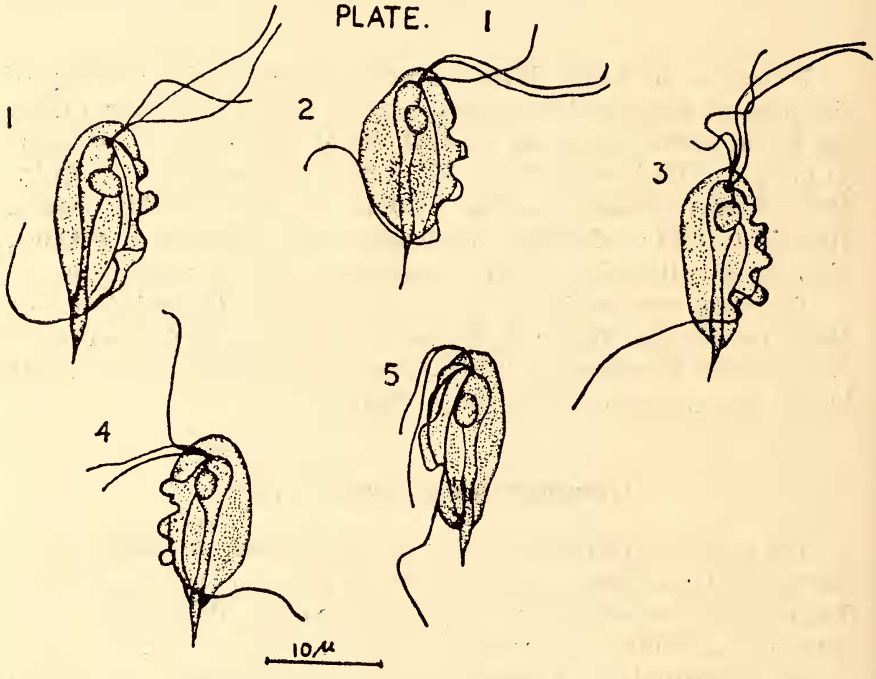
### **Trichomitus hyderabadensis** sp. nov.

The parasite is fusiform in shape, having a broad and rounded anterior end and a somewhat narrower tapering posterior end (Figs. 1, 4, 5). The maximum breadth of the body is attained near the junction of the anterior and mid-third of the body (Figs. 2, 5).

The blepharoplast is a large and conspicuous granule situated about 1-2 $\mu$ behind the anterior extremity. It gives origin to the mastigont elements comprising of three anterior flagella, a posterior flagellum, two accessory filaments, a costa and an axostyle (Figs. 1, 5).

The three anterior flagella are of the same diameter but are unequal in length, the longest measuring a little more than the body length (Figs. 1, 2, 4, 5). While a majority of the parasites examined had only three anterior flagella, there were a few organisms in which there was a fourth anterior flagellum which was much shorter than the others (Fig. 3). The posterior flagellum, running along the outer border of the undulating membrane and becoming free posteriorly, has a long trailing portion reaching up to about one-and-a-half times the length of the body (Figs. 1-3). In addition to the posterior flagellum, the undulating membrane is bordered by an accessory filament, which is of the same thickness as the flagellum (Figs. 1, 5) and runs up to the posterior end of the mem-

brane. Besides, there is an additional filament running between the costa and the accessory filament (Figs. 1, 5). This secondary filament is slightly thinner and shorter than the accessory filament. The undulating membrane extends almost up to the posterior end of the body and is thrown into four to seven folds. The folds show a gradual transition from the anterior to the posterior end, being short and shallow to begin with but large and deep posteriorly (Figs. 1, 3).




*Trichomitus hyderabadensis* sp. nov.

The costa is slightly thicker than the flagellum and runs a somewhat curved course, extending up to the posterior end of the undulating membrane (Figs. 2, 5). It is almost equidistant from the axostyle as well as the undulating membrane.

The axostyle is well developed and has its anterior portion expanded to form a spoon-shaped capitulum (Figs. 1, 2, 3), while the remaining portion is uniform in diameter throughout its course inside the body (Figs. 4, 5). At the posterior end it emerges out of the body and tapers to a pointed tip (Figs. 2, 3). The axostylar spike shows a range of 2·06-7·20 $\mu$ in length, with an average of 4·55 $\mu$. The axostyle does not possess either a swelling or periaxostylar chromatic granules at the point of its emergence from the posterior end of the body.

The nucleus, situated lateral to the spoon-shaped capitulum, is large and ovoidal and has a central endosome.

Neither a pelta nor a cytostome could be observed in the organism.

The dimensions of the parasite are shown in Table 1.

TABLE 1

DIMENSIONS OF *Trichomitus hyderabadensis*

| Particulars | Minimum | Maximum | Average |
|---|---|---|---|
| | (in microns) | | |
| Length of body (excluding spike) .. | 12·85 | 22·11 | 16·45 |
| Maximum width of body .. | 5·14 | 13·88 | 8·56 |
| Length of anterior flagellum I .. | 9·25 | 20·05 | 15·09 |
| Length of anterior flagellum II .. | 13·37 | 22·11 | 18·46 |
| Length of anterior flagellum III .. | 16·97 | 26·73 | 20·81 |
| Length of free posterior flagellum .. | 12·34 | 25·19 | 17·54 |
| Size of nucleus .. | 2·06× 1·54 | 4·11× 3·60 | 3·13× 2·44 |

## DISCUSSION

Flagellates of this genus have been recorded from many amphibia by several workers. Honigberg (1953) gives a comprehensive account of the structure, synonymy and host-list of the common form, *Trichomitus batrachorum* (Perty). The present parasite is distinguished from that species by the absence of the pelta, by the fusiform as contrasted with the ovoidal shape and by its fairly large size. According to Honigberg (1953), the strain of *T. batrachorum* from *Rana* measures 8·5 - 14·5×4·5 - 13·0$\mu$ (average 11·5×7·5$\mu$) and the strain from *Bufo* measures 8·5 - 21·0×4·5 - 20·0$\mu$ (average 12·5×9·0$\mu$). As against this, the present organism measures 12·85 - 22·11$\mu$×5·14 - 13·88$\mu$ (average 16·45×8·56$\mu$).

Among other species of the genus, *T. ulmeri* Gabel (1954b) comes nearest to the present form in not having a pelta, a cytostome or paracostal granules, but is much smaller in size and has an extremely long trailing flagellum, about two-and-a-half times the length of the body. In the absence of the pelta, the new organism also resembles *T. rotunda* Hibler *et al.* (1960), but differs in its larger size and in the presence of unequal anterior flagella.

A comparison of the body dimensions of the new species with other species reported so far (Table 2) shows it to be distinctly larger than any of them.

The type specimens are deposited in the Protozoology Section of the Zoology Museum, Marathwada University, Aurangabad,

TABLE 2

COMPARATIVE DIMENSIONS OF THE VARIOUS SPECIES OF THE GENUS *Trichomitus*

| Species | Length | Breadth |
|---|---|---|
| *T. batrachorum* (Perty) Honigberg, 1953 .. | 8·50-14·50 μ (11·50) | 4·50-13·00 μ (7·50) |
| *T. wenyoni* Wenrich & Nie, 1949 .. | 4·00-8·80 μ (5·80) | 3·00-5·50 μ (3·64) |
| *T. marmotae* (Crouch) Gabel, 1954 .. | 5·20-10·50 μ (7·53) | 3·30-7·10 μ (5·11) |
| *T. ulmeri* Gabel, 1954 .. | 4·00-9·00 μ (5·78) | 1·00-4·00 μ (3·18) |
| *T. rotunda* Hibler *et al.* 1960 .. | 6·83-11·40 μ | 4·56-7·41 μ |
| *T. hyderabadensis* sp. nov. .. | 12·85-22·11 μ (16·45) | 5·14-13·88 μ (8·56) |

ACKNOWLEDGEMENTS

The author is grateful to Dr. S. S. Qadri, Reader in Zoology, Osmania University, Hyderabad, for his guidance and advice, and to Dr. S. Mehdi Ali, Professor of Zoology, Marathwada University, Aurangabad, for providing laboratory facilities and for his keen interest in this work.

DEPARTMENT OF ZOOLOGY,
MARATHWADA UNIVERSITY,
AURANGABAD.
*September* 6, 1967.

R. KRISHNAMURTHY

REFERENCES

GABEL. J. R. (1954a) : The morphology and taxonomy of the intestinal protozoa of the American wood chuck, *Marmota monax* Linnaeus. *J. Morph.* **94** : 473-549.

———— (1954*b*) : A new protozoan, *Paratrichomonas ulmeri* (Mastigophora), from the American wood chuck, *Marmota monax* Linnaeus. *J. Tennessee Acad. Sci.* **29** : 260-265.

HIBLER, C. P. *et al.* (1960) : The morphology and incidence of the trichomonads of swine, *Tritrichomonas suis* (Gruby and Delafond), *Tritrichomonas rotunda* n. sp., and *Trichomonas buttreyi* n. sp. *J. Protozool.* **7** : 159-171.

HONIGBERG, B. M. (1953) : Structure, taxonomic status and Host list of *Tritrichomonas batrachorum* (Perty). *J. Parasit.* **39** : 191-208.

———— (1963) : Evolutionary and systematic relationships in the flagellate order Trichomonadida Kirby. *J. Protozool.* **10** (1) : 20-63.

WENRICH, D. H. & NIE, D. (1949) : The morphology of *Trichomonas wenyoni* (Protozoa, Mastigophora). *J. Morph.* **85** ; 519-531.